






# Exhibit 12

**U.S. Patent No. 10,321,198 (“’198 Patent”)**

Roku’s advertising platform infringes at least Claim 1 of the ’198 Patent.

Claim 1	Roku’s advertising platform
1. A computer-implemented method of dealing with online activity of a first user having a first set-top box and a first online user interface device, the method comprising:	<p>To the extent the preamble is limiting, Roku’s advertising platform performs a computer-implemented method of dealing with online activity of a first user having a first set-top box and a first online user interface device.</p> <p><i>See, e.g., evidence and analysis for claim limitations (a)-(c) below.</i></p> <div>  <b>The Ad Platform Built for TV Streaming</b> A single platform for marketers to reach more cord cutters and measure performance. Advertisers can manage their entire campaign – including OTT, desktop, and mobile campaigns – all in one place.</div> <div> Reach the most cord cutters of any ad platform</div> <div> Leverage TV identity data from the #1 TV streaming platform in the US to manage advertising</div> <div> Reach 4 out of 5 homes in America with OneView</div> <p>Source: <a href="https://info.advertising.roku.com/Oneview_Product_Guide">https://info.advertising.roku.com/Oneview_Product_Guide</a> (Roku OneView_The_Ad_Platform_Built_for_TV_Streaming_One_Sheet.pdf)</p>

Claim 1	Roku's advertising platform
<p>(a) receiving at a computer system a notification, wherein the notification: (i) includes or references a first set-top box identifier, and (ii) results from and signifies a first television advertisement presented using the first set-top box that corresponds to the first set-top box identifier; and</p>	<p>Roku's advertising platform performs the step of receiving at a computer system a notification, wherein the notification: (i) includes or references a first set-top box identifier, and (ii) results from and signifies a first television advertisement presented using the first set-top box that corresponds to the first set-top box identifier.</p> <p>For example, Roku's advertising system receives a notification resulting from and indicating a TV advertisement presented using a set-top box, and that notification identifies the set-top box using a set-top box identifier.</p> <p><i>See, e.g.:</i></p> <p><b>Roku Advertising Framework overview</b></p> <p>The Roku Advertising Framework (RAF) enables the seamless integration of video advertising into your channels. The RAF library, which is built directly into the Roku SDK, includes the following features that make it easy to provide a consistent ad experience across channels:</p> <ul style="list-style-type: none"> <li>• Parsing of ads in <a href="#">VAST2</a>, <a href="#">VAST3</a>, <a href="#">VMAP</a>, and FreeWheel's SmartXML formats (see the table <a href="#">below</a> for details).</li> <li>• Built-in solution for displaying client-side (CSAI) video ads that works with Google Ad Manager (formerly known as DFP), FreeWheel, SpotX, and other 3rd-party servers.</li> <li>• Playback control for server-stitched ads.</li> <li>• Client-side handling of tracking events that is aligned with the IAB/MRC's <a href="#">impression measurement guidelines</a>.</li> <li>• Audience measurement via <a href="#">Nielsen DAR/DCR</a>, <a href="#">Comscore vCE</a>, and other platforms.</li> <li>• Interactive ads through Innovid, BrightLine, and Roku.</li> <li>• Client-side solutions to minimize buffering between ads and content.</li> <li>• Samples for implementing server-side ad insertion (SSAI) with Verizon Media Services, Adobe, Brightcove, Yospace, AWS Elemental MediaTailor servers, and Google Ad Manager Dynamic Ad Insertion (DAI).</li> </ul> <p><a href="https://developer.roku.com/docs/developer-program/advertising/roku-advertising-framework.md">https://developer.roku.com/docs/developer-program/advertising/roku-advertising-framework.md</a></p>

Claim 1	Roku's advertising platform
	<p><b>URL parameter macros</b></p> <hr/> <p>The video ad library allows parameter values to be substituted in ad request and tracking URLs. This allows for dynamic configuration of values that are either not directly exposed to the client application or are unnecessary for it to initialize and maintain. These values are typically used for ad targeting, interaction tracking, and development purposes, or to optimize the ad experience for the user's device.</p>




Claim 1	Roku's advertising platform	
	<b>URL Parameter</b>	<b>Description</b>
	ROKU_ADS_TRACKING_ID	RIDA (Roku ID for Advertising) value used for device identification
	ROKU_ADS_LIMIT_TRACKING	Set to true or false, depending on whether user has limited ad tracking
	ROKU_ADS_APP_ID	Identifies the client application making the ad request
	ROKU_ADS_APP_VERSION	Used to obtain the application version string
	ROKU_ADS_LIB_VERSION	Used to obtain the RAF library version string
	ROKU_ADS_CONTENT_ID	Identifies the content to allow for ad targeting
	ROKU_ADS_CONTENT_GENRE	Identifies the content categorization to allow for ad targeting
	ROKU_ADS_CONTENT_LENGTH	Improves ad targeting by providing length of content (in number of seconds)
	ROKU_ADS_USER_AGENT	Device model and Roku OS version
	ROKU_ADS_DEVICE_MODEL	Device model
	ROKU_ADS_EXTERNAL_IP	External IP address of the device
	ROKU_ADS_DISPLAY_WIDTH	Width of device display
	ROKU_ADS_DISPLAY_HEIGHT	Height of device display
	ROKU_ADS_TIMESTAMP	Current timestamp value (number of milliseconds elapsed since 00:00:00 1/1/1970 GMT)
	ROKU_ADS_CACHE_BUSTER	Makes the URL unique to avoid retrieving cached ad server responses, or to ensure proper counting of unique event tracking beacons
	ROKU_ADS_KIDS_CONTENT	Mark ad requests as "directed towards children." This macro is designed to help your channel comply with the Children's Online Privacy Protection Act (COPPA)
	ROKU_ADS_LOCALE	Returns current locale in the same format as <a href="#">roDeviceInfo.getCurrentLocale()</a> (e.g., "en_US", "es_ES")

Claim 1	Roku's advertising platform
	<p><b>Ad structure</b></p> <p>For a client application that must implement its own ad rendering, it is necessary to understand how the ad structure is represented in the BrightScript object returned from <a href="#">getAds()</a>. The following is a description of the ad structure. Ad pods passed to <a href="#">showAds()</a> must conform to this structure.</p> <p>Note: Square brackets '[' ]' indicate BrightScript arrays, curly brackets '{ }' indicate associative arrays, and prefix '+' indicates a required data member.</p> <p><b>Ad structure</b></p> <pre> adPods : [{   +viewed      : Boolean,   +renderSequence : String ("preroll"   "midroll"   "postroll"),   +duration    : Float (in s),   +renderTime  : Float (in s),   +slots       : Int,   +backfilled  : Boolean,   +tracking: [{     +event: String,     +url: String,     +triggered: Boolean,     valid: Boolean   }],   +ads : [{     +duration    : Float (in s),     +streamFormat : String,     +adServer    : String,     +adId        : String,     +adTitle     : String,     +advertiser  : String,     +creativeId  : String,     +creativeAdId : String,     +clickThrough : String (URL),     +streams : [{       +url      : String (URL),       +bitrate  : Int (in kbps),       +width    : Int,       +height   : Int,       +mimeType : String,       +provider : String     }],     +tracking : [{       +event      : String,       +url        : String (URL),       +triggered   : Boolean,       valid       : Boolean,       time        : Float (in s)     }],     companionAds: [{       +url      : String (URL),       +width    : Int,       +height   : Int,       +mimeType : String,       +clickThrough : String (URL),       +provider  : String,       +tracking : [{         +event      : String,         +url        : String (URL),         +triggered   : Boolean,         valid       : Boolean,         time        : Float (in s)       }]     }]   }] }] </pre> <p>The object returned from a new call to <a href="#">getAds()</a> with no parameters is an array of adPods in this format.</p>

## Tracking


Tracking events are triggered automatically during ad rendering by [showAds\(\)](#). For client applications that perform their own ad rendering, the valid event types that must be handled are represented in the `tracking` array of the [Ad Structure](#) by:

Event name	Trigger condition
Impression	Start of ad render (e.g., first frame of a video ad displayed)
PodStart	Beginning of ad pod render
PodComplete	Completed rendering ad pod
FirstQuartile	25% of video ad rendered
Midpoint	50% of video ad rendered
ThirdQuartile	75% of video ad rendered
Complete	100% of video ad rendered
Error	Error during ad parsing or rendering (VAST 3.0)
Close	User exited out of ad rendering before completion
Skip	User skipped ad (if skippable)
Pause	User paused ad
Resume	User resumed ad
Rewind	User rewound ad
Mute	User muted ad
Unmute	User un-muted ad
AcceptInvitation	User launched another portion of an ad (for interactive ads)

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	Source: <a href="https://developer.roku.com/docs/developer-program/advertising/integrating-rokuadvertising-framework.md">https://developer.roku.com/docs/developer-program/advertising/integrating-rokuadvertising-framework.md</a>
<p>(b) using the notification, automatically with the computer system causing a first action to be taken with respect to online activity through the first online user interface device subsequent to presentation of the first television advertisement, which first online user interface device corresponds, at a time of the first action, to a first online user interface device identifier;</p>	<p>Roku's advertising platform performs the step of, using the notification, automatically with the computer system causing a first action to be taken with respect to online activity through the first online user interface device subsequent to presentation of the first television advertisement, which first online user interface device corresponds, at a time of the first action, to a first online user interface device identifier.</p> <p>For example, the Roku advertising platform uses the notification it received as a result of the television advertisement to cause an action (such as, e.g., delivering an advertisement to an online device or selecting an ad for display on the online device) with respect to online activity on an online device having a device identifier.</p> <p><i>See, e.g.:</i></p> <div>  <p><b>OneView™</b></p> <p><b>The Ad Platform Built for TV Streaming</b></p> <p>A single platform for marketers to reach more cord cutters and measure performance. Advertisers can manage their entire campaign – including OTT, desktop, and mobile campaigns – all in one place.</p> <div>  <p><b>Proprietary Audiences</b></p> <p>Activate more than 100 unique segments based on data from the #1 TV streaming platform in the U.S.</p>  </div> </div> <p>Source: <a href="https://info.advertising.roku.com/Oneview_Product_Guide">https://info.advertising.roku.com/Oneview_Product_Guide</a> (Roku OneView_The_Ad_Platform_Built_for_TV_Streaming_One_Sheet.pdf)</p>



Claim 1	Roku's advertising platform
	<p><b>3. Activity and Usage Information on Roku Sites, Roku's Mobile Apps, Roku's Channels and Roku Devices</b></p> <p>We receive information about your interactions with the Roku Services, such as your browsing history, search history, search results, audio information when you use voice-enabled features, channels you access (including usage statistics such as what channels you access, the time you access them, and how long you spend viewing them), interactions with content and ads, and settings and preferences.</p> <p>When you access Roku's Channels and Roku Direct Publisher Channels, we receive information about your activities like the videos and other content you select and view within these channels. If you use the Roku Media Player channel to view your video or photo files or listen to your music files, Roku will collect data about the files viewed within the Roku Media Player, such as codecs, and other metadata of the local files you play through the Roku Media Player.</p> <p><b>4. Activity, Location, and Usage Information Through Roku's Advertising Services</b></p> <p>We may receive information about your activities on other websites, apps, and connected devices (including Smart TVs) to which Roku provides advertising or measurement and analytics services, including the content you view, the date and time of your visits, how you interact with these websites, apps and devices, and how you interact and respond to ads. We may also receive your precise geolocation information.</p> <p>Source: <a href="https://docs.roku.com/published/userprivacypolicy/en/us">https://docs.roku.com/published/userprivacypolicy/en/us</a></p>

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	<div>  </div> <div> <h2>Guaranteed Outcomes</h2> </div> <div> <p>Guarantee demo delivery or business outcomes such as website visits or mobile app downloads</p> </div> <div> <p>Source: <a href="https://info.advertising.roku.com/Oneview_Product_Guide">https://info.advertising.roku.com/Oneview_Product_Guide</a> (Roku OneView_The_Ad_Platform_Built_for_TV_Streaming_One_Sheet.pdf)</p> </div>

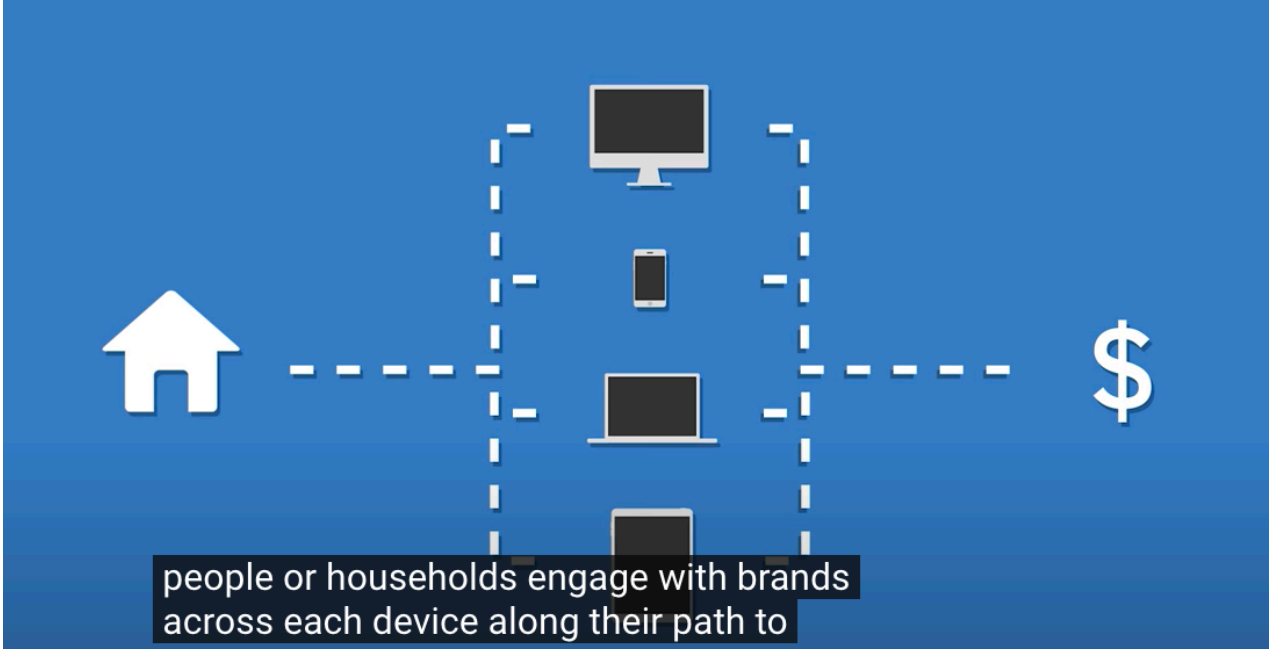
Claim 1	Roku's advertising platform
	<p><b>B. Information We Collect Automatically Through the Roku Services</b></p> <p><b>1. Device Information</b></p> <p>We may receive information about the browser and devices you use to access the Internet, including our services, such as device types and models, unique identifiers (including, for Roku Devices, the Advertising Identifier associated with that device), IP address, operating system type and version, browser type and language, Wi-Fi network name and connection data, and information about other devices connected to the same network. For Roku Devices, we may also collect the name of the retailer to whom your Roku Device was shipped, various quality measures, error logs, software version numbers, and device status (including the status of battery-powered accessories). When you enable Bluetooth on a Roku Device, we may collect your Bluetooth usage, such as connection quality, the name of the device connected to your Roku Device, and the start and stop time of your connection.</p>

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	<p><b>B. Information We Collect Automatically Through the Roku Services</b></p> <p><b>1. Device Information</b></p> <p>We may receive information about the browser and devices you use to access the Internet, including our services, such as device types and models, unique identifiers (including, for Roku Devices, the Advertising Identifier associated with that device), IP address, operating system type and version, browser type and language, Wi-Fi network name and connection data, and information about other devices connected to the same network. For Roku Devices, we may also collect the name of the retailer to whom your Roku Device was shipped, various quality measures, error logs, software version numbers, and device status (including the status of battery-powered accessories). When you enable Bluetooth on a Roku Device, we may collect your Bluetooth usage, such as connection quality, the name of the device connected to your Roku Device, and the start and stop time of your connection.</p> <p><b>3. Activity and Usage Information on Roku Sites, Roku's Mobile Apps, Roku's Channels and Roku Devices</b></p> <p>We receive information about your interactions with the Roku Services, such as your browsing history, search history, search results, audio information when you use voice-enabled features, channels you access (including usage statistics such as what channels you access, the time you access them, and how long you spend viewing them), interactions with content and ads, and settings and preferences.</p>

Claim 1	Roku's advertising platform
	<p><b>Part II. Information Usage</b></p> <p>Information collected by Roku is used for the following purposes:</p> <p><b>4. Advertising Services.</b> We use your information to show you ads (including personalized ads) through the Roku Services, on Third-Party Channels, and on third-party websites, mobile apps, platforms and devices. We use your information to measure and understand the reach, viewership, and effectiveness of advertising, and provide advertising analytics and reporting. We also help Advertisers and advertising partners reach the desired audience and understand and improve their ad campaigns. We associate the browsers and devices (such as smartphones, tablets, streaming players, connected TVs, and computers) used by the same individual or household for purposes of advertising to that individual or household on different browsers or devices. This allows, for example, ads you see on your tablet to be based on activities you engaged in on your Roku TV.</p> <p><b>5. Marketing and Promotions.</b> We use your information for marketing purposes, including sending you emails and text messages about products, events, promotions and offers from Roku or its partners or advertisers, and understanding the effectiveness of our marketing;</p> <p><b>6. Analytics and Performance.</b> We use your information to measure performance and analyze key metrics relevant to our business;</p> <p>Source: <a href="https://docs.roku.com/published/userprivacypolicy/en/us">https://docs.roku.com/published/userprivacypolicy/en/us</a></p>

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<p>(c) wherein the first online user interface device identifier and the first set top box identifier are associated without using personally identifiable information pertaining to a user of the set-top box that corresponds to the first set-top box identifier.</p>	<p>In Roku's advertising platform, the first online user interface device identifier and the first set top box identifier are associated without using personally identifiable information pertaining to a user of the set-top box that corresponds to the first set-top box identifier.</p> <p>For example, in Roku's probabilistic device-linking, the set-top box identifier and the online access identifier are associated based on their connection to a common LAN.</p> <p><i>See, e.g.:</i></p> <p><b>B. Information We Collect Automatically Through the Roku Services</b></p> <p><b>1. Device Information</b></p> <p>We may receive information about the browser and devices you use to access the Internet, including our services, such as device types and models, unique identifiers (including, for Roku Devices, the Advertising Identifier associated with that device), IP address, operating system type and version, browser type and language, Wi-Fi network name and connection data, and information about other devices connected to the same network. For Roku Devices, we may also collect the name of the retailer to whom your Roku Device was shipped, various quality measures, error logs, software version numbers, and device status (including the status of battery-powered accessories). When you enable Bluetooth on a Roku Device, we may collect your Bluetooth usage, such as connection quality, the name of the device connected to your Roku Device, and the start and stop time of your connection.</p> <p>Source: <a href="https://docs.roku.com/published/userprivacypolicy/en/us">https://docs.roku.com/published/userprivacypolicy/en/us</a></p>

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	<p>Probabilistic device-linking approaches use data analysis to associate multiple devices to a specific consumer or household. Let's say a marketer serves an ad to a desktop on a certain WiFi residential address. Later, the marketer sees a mobile device using that same Wi-Fi connection. It's probable -- but not certain -- that the device is part of that household. As you can see, this approach delivers more scale, but with less assurance that the linkages are accurate.</p> <p>Source: <a href="https://www.mediapost.com/publications/article/255323/probabilistic-or-deterministicwhats-the-best">https://www.mediapost.com/publications/article/255323/probabilistic-or-deterministicwhats-the-best</a> (by Laura Koulet - Senior Product Manager DataXu)</p> <p>"DataXu helps crack the code of cross device usage, enabling you to deliver your brand's message to the right consumers at the right time in the right format on the right device. By combining deterministic and probabilistic data together and creating a curated graph, DataXu is able to fully understand how people or households engage with brands across each device along their path to purchase."</p>

Claim 1	Roku's advertising platform
	 <p>people or households engage with brands across each device along their path to</p> <p>Source: Cross-device solutions made simple: discover dataxu's OneView technology  <a href="https://www.youtube.com/watch?v=ZCYttkjjtHY">https://www.youtube.com/watch?v=ZCYttkjjtHY</a> (1:58-2:20)</p>